## REMARKS

Claims 1-8, 11-12, and 14-25 are pending. Claims 1, 4-7, 11-12, 14-18-24 are amended. Claims 9, 10, 13, and 26-28 are canceled. Claims 29, 30, and 31 have been added.

Claims 1-3, 5-8, 11-18, 20, 22, 23, and 25-28 were rejected under 35 U.S.C. 103(a) as being upatentable over Wilding et al. (U.S. Pat. No. 5,635,358) in view of Brody (U.S. Pat. No. 5,726,404).

Claim 1, as presented herein, refers to a microfluidic device and requires that the microfluidic device have a first gas actuator comprising a first chamber and a second gas actuator comprising a second chamber.

The first and second chambers are operably connected to the microfluidic network but are otherwise sealed. An example of a microfluidic network having first and second chambers is illustrated in FIG. 15a of the present application reproduced here.

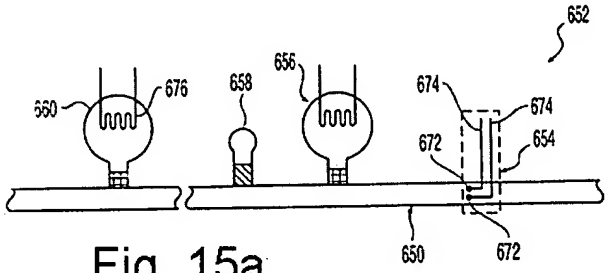
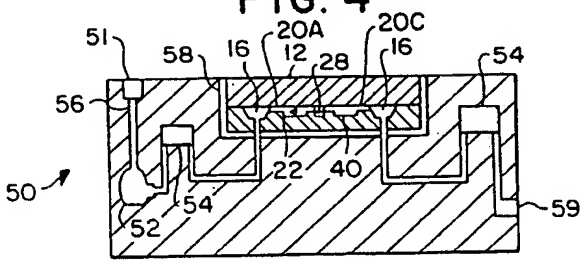



Fig. 15a

Actuators 660 and 656 of FIG. 15a are connected to the network but are otherwise sealed.

Wilding discloses a device having multiple ports 16 and a mesoscale flow system. As seen in FIG. 4 of Wilding reproduced here, ports 16 are connected to the flow system and also to external flow lines (e.g., flow line 56). No device of Wilding has a gas actuator with a chamber connected to a microfluidic network but otherwise sealed as required by claim 1. Brody discloses a microswitch with external reservoirs. No combination of Wilding and Brody discloses or suggests the microfluidic device of claim 1.

FIG. 4



Claim 12, as presented herein recites a microfluidic device and requires that the microfluidic device have a first gas actuator configured to move sample material between first and second spaced-apart locations of the microfluidic network, a vent connected to the microfluidic network between the first and second locations and configured to dissipate the gas pressure provided by the first gas actuator, and a hydrophobic material configured to prevent sample material from exiting the microfluidic network by the vent. An example of a microfluidic network having a vent and hydrophobic material arranged in accord with claim 12 is illustrated in FIG. 4 of the present application reproduced here. Actuator 170 moves material from region 158 to module 160. Vent 202 dissipates gas pressure generated by actuator 170. Element 206 prevents sample from exiting the microfluidic network by vent 202.

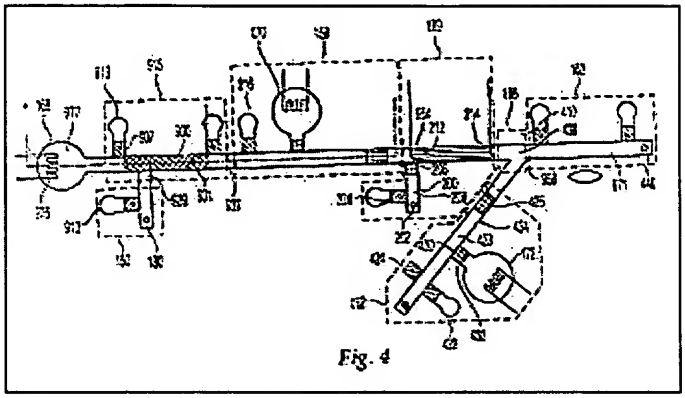
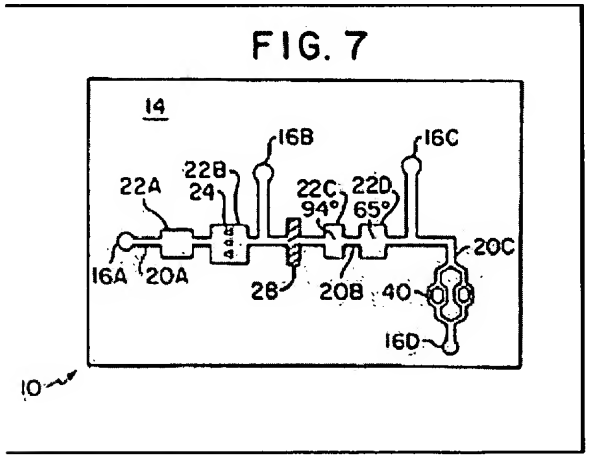


Fig. 4




As discussed above, Wilding discloses devices having ports 16 and a flow system. One such device is shown in FIG. 7 of Wilding reproduced here. Neither this Wilding device nor any other has a vent and hydrophobic material arranged as required by claim 12. Brody neither discloses nor suggests the claimed vent and hydrophobic material.

Claim 20, as presented herein, requires venting gas from upstream of a microdroplet to stop the microdroplet. Claim 23, as presented herein, requires stopping a microdroplet at a second microdroplet position by venting gas from within a microfluidic device upstream of an upstream interface of the microdroplet. No combination of Wilding and Brody discloses or suggests the methods of claim 20 or 23.

Claims 10, 19, 21, and 24 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Wilding in view of Brody.

Claim 10 has been canceled.

Claims 19, 21, and 24 are believed to be patentable for at least the reasons discussed above with respect to their respective parent claims.

Enclosed is a ~~$450.~~225.00 check for the Petition for Extension of Time fee. Please apply any other charges or credits to deposit account 06-1050.

Respectfully submitted,

Date: May 31, 2005

Julius C. Fister, III, Ph.D.
Reg. No. 46,702

Fish & Richardson P.C.
225 Franklin Street
Boston, MA 02110-2804
Telephone: (617) 542-5070
Facsimile: (617) 542-8906